

CLAIMS

What is claimed is:

1. A shredding device comprising:
 - a feeder;
 - at least one first blade having a first cutting area;
 - at least one second blade having a second cutting area and being rotatably disposed substantially parallel to the at least one first blade, the first cutting area of the at least one first blade overlapping at least a portion of the second cutting area of the at least one second blade;
 - means for rotating the at least one first blade and the at least one second blade, wherein rotation of the at least one first blade does not interfere with the rotation of the at least one second blade;
 - the feeder being configured to controllably direct a material into the overlapping portion of the at least one first blade and the at least one second blade to produce shredded material segments, the segments measuring less than a predetermined size in any direction.
2. The shredding device of claim 1 wherein the material is gypsum board.
3. The shredding device of claim 1 wherein the at least one first blade and the at least one second blade have a blade density of from about 0.50 to about 0.65.
4. The shredding device of claim 1 wherein the at least one first blade and the at least one second blade rotate in opposite directions.
5. The shredding device of claim 1 wherein the material has a thickness of up about 2 inches.
6. The shredding device of claim 1 wherein the predetermined size is about ½ inch or less.
7. The shredding device of claim 1 wherein the at least one first blade and the at least one second blade have a gullet disposed adjacent a base of a corresponding cutting surface of the first cutting area of the at least one first blade and the second cutting area of the at least one second blade, the gullet defining an open geometric profile between about 80 percent and

about 90 percent the corresponding cutting surface of the first cutting area of the at least one first blade and the second cutting area of the at least one second blade.

8. The shredding device of claim 1 wherein the overlapping portion between the at least one first blade and the at least one second blade being greater than a thickness of the material.
9. The shredding device of claim 1 wherein the overlapping portion between the at least one first blade and the at least one second blade being greater than a thickness of the material and the at least one first blade and the at least one second blade each having a protrusion extending past a surface of the material opposite each of the at least one first blade and the at least one second blade.
10. The shredding device of claim 1 further comprising:
 - a conveyor having a first end and a second end, the first end of the conveyor disposed adjacent to the at least one first blade and the at least one second blade to receive and transport shredded material segments from the at least one first blade and the at least one second blade; and
 - an enclosure disposed adjacent the second end of the conveyor to receive the shredded material segments from the conveyor.
11. The shredding device of claim 1 wherein the at least one first blade is a plurality of first blades, the at least one second blade is a plurality of second blades, and the first cutting area of the plurality of first blades and the second cutting area of the plurality of second blades overlap and mesh with each other.
12. The shredding device of claim 1 wherein at least one of the first cutting area of the at least one first blade and the second cutting area of the at least one second blade is configured to have a negative hook angle.
13. The shredding device of claim 12 wherein the negative hook angle is between about 45 degrees and about 80 degrees.
14. The shredding device of claim 13 wherein the negative hook angle is about 60 degrees.
15. A method for shredding a material with a shredding device for producing shredded material segments, the shredding device including a feeder, at least one first blade, at least one second

blade rotatably associated with the at least one first blade, the at least one first blade and the at least one second blade having an overlap, the method comprising:

- rotating the at least one first blade and the at least one second blade;
- directing the material into the overlap for producing shredded material segments;
- forming a plurality of blade cutting surfaces having a negative hook angle of at least about 45 degrees on at least one of the at least one first blade or the at least one second blade so as to produce non-strip material segments measuring less than a predetermined size in any direction.

16. The method of claim 15 wherein the negative hook angle is between about 45 degrees and about 80 degrees.

17. The method of claim 16 wherein the negative hook angle is about 60 degrees.

18. The method of claim 15 wherein the predetermined size is about ½ inch or less.

19. The method of claim 15 wherein the step of directing the material further includes directing the material into the overlap so that each of the at least one first blade and the at least one second blade cut through the entire thickness of the material and containing a protrusion past a surface of the material that is furthest from each of the at least one first blade and the at least one second blade.

20. The method of claim 19 further comprising the steps of:

- conveying the shredded material segments to a location away from the at least one first blade and the at least one second blade; and
- depositing the shredded material segments at the location, the location being surrounded by an enclosure.

21. A shredding device comprising:

- a feeder;
- a plurality of first blades;
- a plurality of second blades interposed between the plurality of first blades and rotatably associated with the plurality of first blades, the plurality of first blades and the plurality of second blades having an overlap and intermeshing, wherein at least one of the plurality of first blades and at least one of the plurality of second blades

has a negative hook angle of at least about 45 degrees, wherein upon the material being directed into the overlap, each of the plurality of first blades and the plurality of second blades cutting through the entire thickness of the material and containing a protrusion past a surface of the material that is furthest from each of the at least one first blade and the at least one second blade;

means for rotating the at least one first blade and the at least one second blade wherein rotation of the at least one first blade does not interfere with the rotation of the at least one second blade;

the feeder controllably directing a material into the overlap for producing non-strip shredded material segments, the segments measuring less than a predetermined size in any direction;

a conveyor having a first end and a second end, the first end of the conveyor disposed adjacent to the at least one first blade and the at least one second blade for transporting shredded material segments to a location away from the at least one first blade and the at least one second blade; and

an enclosure disposed adjacent the second end of the conveyor, the enclosure surrounding the location receiving the shredded material segments from the conveyor.